

## PSYCHE.

### THE SPECIES OF GRYLLUS FOUND IN THE UNITED STATES EAST OF THE SIERRA NEVADAS.

BY SAMUEL H. SCUDER, CAMBRIDGE, MASS.

In 1862 I recorded in New England and the region not far distant from it six species of *Gryllus* of which two were described as new, both from New England. These species supposed to be new have been little recognized since and may now be definitely regarded as synonyms. The results of a recent study of material from over the whole of the United States, amounting to nearly a thousand specimens, are brought forward

in this and a companion paper (*PSYCHE*, ix. 26;) on the genus *Gryllus* as found on the Pacific coast. Most of the species are extremely difficult to separate.

So far as I can discover, there are but three species in the northern and central United States east of the Mississippi.\* Each of these, but in differing degrees, develops both macropterous and brachypterous forms and may be separated by the following table:—

- |  |                         |
|--|-------------------------|
| <i>a</i> <sup>1</sup> . Black species, the tegmina and parts of the body sometimes testaceous: first joint of antennae not projecting beyond the front of the head.  |                         |
| <i>b</i> <sup>1</sup> . Larger, more frequently with testaceous tegmina, the male relatively stouter with larger and broader head, the female with ovipositor nearly, quite, or more than, half as long again as hind femora . . . . . | <i>aberrans</i> Serv.   |
| <i>b</i> <sup>2</sup> . Smaller, more frequently black throughout, the male relatively slenderer with narrower and less tumid head, the female with ovipositor rarely more than one fourth as long again as hind femora. . . . .       | <i>gentilis</i> Burm.   |
| <i>x</i> <sup>2</sup> . Straw-colored with light fuscous markings: first joint of antennae projecting slightly beyond front of head. . . . .   | <i>domesticus</i> Linn. |

The separation of the first two species is a difficult task, and I have been unable in all cases to place specimens, especially of the male sex. The characteristics given in the table have there-

fore of necessity been stated in a rather general form. *G. aberrans* has for synonyms *G. larvatus* Serv., *G. angustus*

\* Excepting that a single example of a southern species described further on has been taken in Indiana.

Scudd., *G. signatipes* Walk., and *G. scudderianus* Sauss. It is widely spread, only less widely than the next species. In this paper I take account only of specimens at hand for study without regard to literature. I have seen specimens from New Hampshire: White Mt. valleys, Mt. Washington (Slosson);—Massachusetts: vicinity of Boston, Sherborn (Morse), Wellesley (Morse), Cape Cod (Sanborn), Provincetown (Morse), Nantucket;—Connecticut: South Kent, Canaan, and New Haven (Morse);—Rhode Island: Block Island (Morse);—New York: Ithaca (Morse);—Pennsylvania: Harrisburg (Shurtleff);—Maryland (Uhler);—Indiana (Blatchley);—Ohio: Olive (Higginson);—Illinois: Green River (McNeill), southern Illinois (Kennicott);—Lake Superior (Uhler);—Manitoba: Red River (Kennicott);—Minnesota:—Iowa: Denison (Allen), Dallas Co. (Allen);—Nebraska: Platte River (Hayden), Nebraska City (Hayden), Loup Fork, Pawnee Reserve (Hayden);—North Carolina (Shute, Ordway);—Georgia (Morrison, Oemler, Gerhard);—Florida: Fernandina (Palmer), Lake Okeechobee (Palmer), Sanford (Frazer, Comstock), Pilatka, Appalachicola (Thaxter), Ft. Reed (Comstock); Charlotte Harbor (Slosson), Capron (Comstock), Key West (Palmer);—Alabama: Utaw;—Louisiana: Milliken's Bend (Shurtleff), New Orleans (Akhurst);—Texas (Belfrage), Pecos River (Pope). Both macropterous and brachypterous forms occur in nearly

every district, and in nearly all of them the brachypterous forms largely prevail, the macropterous being apparently nowhere uncommon.

*G. pennsylvanicus* has for synonyms *A. nigra* Harr. and *G. neglectus* Scudd. It is our most widespread species, crossing the continent in the north and extending south to the limits of the United States at least west of the Mississippi. I have specimens before me from Maine: Norway (Smith), Fryeburg (Morse);—New Hampshire: Hanover (Weed), Holderness (Morse), Kearsarge Village (Morse), White Mt. valleys, Franconia (Slosson);—Massachusetts: Adams, Reading, Dover, Wellesley, Sherborn, Winchendon, Blue Hills, Medfield, Natick, and Nantucket (Morse), Cambridge, Provincetown, Cape Cod;—Rhode Island: Block Isl. (Uhler);—Connecticut: Stamford, Canaan, and South Kent (Morse);—New York: Albany, West Farms (Akhurst), Ithaca (Morse), Chateaugay (Bowditch);—Maryland (Uhler);—Michigan: Detroit (Gillman);—Illinois: Port Byron (McNeill), Chicago, Rock Island (McNeill), southern Illinois (Kennicott, Thomas);—Missouri: St. Louis (Engelmann);—Kansas: Lakin (Scudder);—Nebraska: Platte River (Hayden);—Iowa: Dallas Co., Crawford Co., Denison, and Jefferson (Allen);—Colorado: Ft. Collins (Baker), Denver, Grenada, and Pueblo (Scudder), 5500' (Morrison);—Utah: Parowan (Palmer), Mt. Trumbull (Palmer), near Beaver (Palmer), Salt Lake (Scudder);—Montana: expl. of

upper Missouri (Hayden), Muscle Shell River (Hitz), N. Pac. R. R. Surv. (Suckley), N. W. Boundary Survey (Kennerley);—British Columbia, Washington, Oregon, and California (the details given in another paper);—New Mexico: Ft. Buchanan (Nevin), Santa Fé (Cockerell), Mesilla Park (Cockerell), Las Vegas (Cockerell);—Texas: Goliad (Palmer), Pecos River (Pope), San Antonio (Palmer), Corpus Christi Bay (Palmer). Ringgold Barracks (Schott). Macropterous specimens are very rare in this species, and have been seen by me only from Massachusetts, Missouri, and Colorado.

*G. domesticus* is before me in specimens from New York: West Farms (Akhurst);—southern Illinois (Uhler);—Carolina (Schaum);—Georgia: Roswell (King);—Alabama: Utaw;—and Texas (Belfrage). All that I have seen are macropterous, but brachypterous specimens occur in the Old World.

West of the Mississippi and north of Utah, *L. abbreviatus* and *G. pennsylvanicus* (a .. especially the latter) seem to be the only species known. In Kansas, however, another species, *G. personatus* Uhl., appears, which also extends to Colorado and Texas. It may be distinguished from these species by having the genae of the head and the lateral lobes of the pronotum luteous or testaceous instead of black. I have seen specimens from Kansas (Uhler), between Ft. Kearny and Ft. Laramie (Suckley); — Colorado: Ft. Collins (Baker in Morse's coll.); — Texas: San Antonio (Palmer), Eagle Pass (Schott), Pecos River (Pope). Both macropterous and brachypterous forms occur, the latter appearing to prevail.

In the southern Rocky Mountain region (Colorado, Utah, New Mexico and Arizona) four species are found, one of them new and described below. They may be separated by the following table:



The distribution of *G. personatus* has just been given, and that of *G. pennsylvanicus* in an earlier part of this paper in detail. *G. integer* was described and its distribution given in my paper on the species of *Gryllus* on the Pacific coast. A description of the species regarded as new follows.

*Gryllus armatus* sp. nov. — Small and rather slender with piceous body. Head scarcely

or not wider than the pronotum, gently tumid, the vertex not very prominent, the whole head

black. Pronotum rather more than half as broad again as long, equal, with nearly parallel sides, feebly villous, black throughout except for a delicate ferruginous margination in front, the front margin truncate, the hind margin faintly convex, with a median impressed line fading on posterior third, the lower margin of lateral lobes gently and obliquely convex. Tegmina covering ( $\delta$ ) or nearly covering ( $\varphi$ ) the abdomen, testaceous, the mediastinal vein with from two to four branches, the post-specular area of male tegmina rather large; wings usually not surpassing the tegmina but sometimes caudate. Legs testaceous, the hind femora not very stout, the hind tibiae with seven or eight spines on the outer side, the upper inner calcar scarcely shorter than the intermediate

calcar. Ovipositor a little longer than the hind femora.

Length of body,  $\delta$ , 17.5 mm.,  $\varphi$ , 17 mm.; pronotum,  $\delta$   $\varphi$ , 3.25 mm.; breadth of same,  $\delta$ , 5.25 mm.,  $\varphi$ , 5 mm.; length of tegmina,  $\delta$ , 10.5 mm.,  $\varphi$ , 9 mm.; hind femora,  $\delta$   $\varphi$ , 11 mm.; ovipositor, 13 mm.

6  $\delta$ , 1  $\varphi$ ; Beaver Dam, Utah, April (Palmer); Ehrenberg, Ariz. (Palmer); Ft. Whipple, Ariz. (Palmer).

About a third of the specimens seen are macropterous.

There remain the species of the southern United States east of the Rocky Mts. These may be separated by the following table:—

- $a^1$ . Pronotum wholly black.
- $b$ . Pronotum about half as broad again as long.
  - $c^1$ . Very large species, about 25 mm. long, with convex hind margin to the pronotum, and 7-8 spines on hind tibiae . . . . . *firmus* sp. nov
  - $c^2$ . Medium or small sized species, not often exceeding 20 mm. long, with nearly truncate or faintly angulate hind margin to the pronotum and 5-6 spines on hind tibiae . . . . . *abbreviatus* Serv., *pennsylvanicus* Burm.
- $b^2$ . Pronotum nearly twice as broad again as long. . . . . *integer* Scudd.
- $a^2$ . Pronotum prevailingly light or with light markings.
  - $b^1$ . Wholly testaceous, more or less marked with fuscous; first joint of antennae projecting slightly beyond front of head. . . . . *domesticus* Linn.
  - $b^2$ . Prevailingly dark; first joint of antennae not projecting beyond front of head.
    - $c^1$ . Head except vertex testaceous; hind tibiae relatively short, with 5-6 spines on margins. . . . . *personatus* Uhl.
    - $c^2$ . Head wholly black; hind tibiae relatively long, with 7-8 spines on margins . . . . . *rubens* sp. nov.

*G. assimilis* Fabr. is not included in this table, as I have seen United States specimens only from California, but it is reported to occur in the Gulf States. The distribution of all the species of the

table excepting the first and the last has already been given or referred to. The two remaining species may now be described.

*Gryllus firmus* sp. nov. — Large and stout, with piceous body. Head large, tumid, with prominent vertex, scarcely broader than the pronotum, wholly black. Pronotum stout, black, most delicately margined anteriorly with ferruginous, broadest in advance of the middle, the sides being slightly and not quite uniformly convex, half as broad again as long, the front margin with scarcely perceptible concavity, the hind margin slightly but distinctly and broadly convex, with a median impressed line scarcely or not visible on posterior third, the lower margin of the lateral lobes oblique and nearly straight. Tegmina nearly or quite covering the abdomen, testaceous more or less infuscated, often in the female leaving a clear testaceous humeral stripe, the mediastinal vein with three or four branches; wings generally no longer than the body, but sometimes caudate in the female. Legs ferruginous or testaceous-ferruginous, often more or less infuscated, the hind femora stout, the hind tibiae with generally six or seven rather long spines on the outer side, the upper inner calcar very long and almost as long as the intermediate calcar. Ovipositor fully a third longer than the hind femora.

Length of body, ♂, 27 mm., ♀, 26 mm.; pronotum, ♂, 5 mm., ♀, 5.5 mm.; breadth of same, ♂ ♀, 7.5 mm.; length of tegmina, ♂ ♀, 14.5 mm.; hind femora, ♂, 16 mm., ♀, 16.75 mm.; ovipositor, 23.5 mm.

6 ♂, 7 ♀. Brookville, Ind. (Dr. Rufus Hayward); Smithville, N. C., Nov. 22; Dingo Bluff, N. C., Nov. 15 (Parker and Maynard); Georgia (Oemler, Gerhardt); Sandford, Fla. (G. B. Frazer); Key West (Morrison). I have also specimens from Texas.

This is the largest United States species known to me. About a third of the specimens seen are macropterous.

*Gryllus rubens* sp. nov. — Rather large and somewhat slender, the body piceous with rufous and rufo-testaceous markings. Head large, full, the vertex rather prominent, slightly wider than the pronotum, the whole head piceous. Pronotum about half as broad again as long, subequal with scarcely convex sides, feebly villous, piceous, the front and hind borders very narrowly margined with rufo-testaceous, the lateral lobes broadly striped above (at place of lateral carinae) and down the front with rufo-testaceous, the front margin of disk very faintly angulato-emarginate, the hind margin very faintly bisinuate, the lower margin of lateral lobes gently and obliquely convex and broadly and feebly marginate. Tegmina covering the abdomen, testaceous, faintly infumated, the mediastinal vein with three branches; wings in only specimen seen not surpassing the tegmina. Legs rufous slightly tinged with testaceous and more or less infuscated, the hind femora moderately stout, the hind tibiae with six rather long spines on the inner, seven on the outer margin, the upper inner calcar nearly as long as the intermediate calcar. Ovipositor about a fourth longer than hind femora.

Length of body, 20 mm.; pronotum, 3.75 mm.; breadth of same, 6 mm.; length of tegmina, 12 mm.; hind femora, 13 mm.; ovipositor, 16 mm.

1 ♀. Auburn, Alabama (Baker, in Morse coll.).

A word may be added concerning wing-length. Of the ten species of *Gryllus* recognized in this and my complementary paper, all but two appear in both the forms, macropterous and brachypterous; and of these two one, *G. rubens*, is known only by a single specimen, and the other, *G. domesticus*, is known to occur in both forms in Europe, though here I have seen only

macropterous. The caudate condition is extremely rare in *G. pennsylvanicus*, common in *G. abbreviatus*, is found in 4 out of the 5 specimens seen of *G. assimilis*, 5 out of 9 of *G. personatus*, 27 out of 31 (and so nearly universal) in *G. integer*, 1 out of 9 in *G. vocalis*,

2 out of 7 in *G. armatus*, and 6 out of 16 in *G. firmus*. In general it appears to be rather more common in females than in males.

The crickets retreat, figured in Harper's Magazine, Vol. 93, p. 693, is probably that of *G. abbreviatus*.

## A NEW SPECIES OF THE GENUS SAISSETIA (COCCIDAE).

With notes on some of the species of the genus not well understood.

BY GEORGE B. KING, LAWRENCE, MASS.

### SAISSETIA NIGRELLA n. sp.

♀ Scale black 3 mm. long,  $2\frac{1}{2}$  wide, 2 high very convex, shiny surface smooth marginally carinated, texture thick. Of the 20 specimens examined all showed and 8 segmentes antenna; variable however, as follows :

Segment	1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 in $\mu$
	46-44-48-40-44-24-24-52
	46-48-60-48-40-24-24-52
	46-48-52-36-40-24-24-52
	44-44-48-40-44-24-24-52

Hind leg : coxa 100; femur with trochanter 160; tibia 104; tarsus 80. Marginal spines, club-shaped with split tips  $36 \times 24 \mu$  long. Digitules of claw  $24 \mu$  long with large dilated end. The derm is yellowish brown with irregular oval gland orifices, no irregular plates forming a marquetry pattern as in *S. depressa* and *S. nigra*, but the skin seems to be without tessellation.

Hab.—On *Ficus* sp. at Tongaat, Natal, South Africa (Fuller No. 7).

The above species were sent to Prof. Cockerell by Mr. Fuller with several other species of Coccidae. Being the

only species of Saissetia sent, Prof. Cockerell turned it over to me for study. I wish to say however that it is a very hard species to clear for study, owing to its thick tough skin, which resists the action of caustic potash after prolonged boiling. Superficially it resembles *S. nigra* but differs from that species by being very much smaller, structurally by the derm not having the marquetry pattern with oval gland pits enclosed.

### SAISSETIA NIGRA.

*Lecanium nigrum* Nietner 1861.

### SAISSETIA DEPRESSA.

*Lecanium depressum* Targioni 1867.

The above two species seem to be decidedly mixed, both being considered by some coccidologists as one species, while others believe depressa to be a variety of nigra. Mr. Maskell, Trans. N. Z. Inst. 1893, believed *nigra*, *depressa* and *begoniae* (I have not seen *begoniae*)